

**AMENDMENT**

Serial Number: 10/654,422

Filing Date: September 4, 2003

Title: Microencapsulation Of Oxygen Or Water Sensitive Materials

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**REMARKS**

This Amendment is responsive to the non-final Office Action mailed April 15, 2009. At the time of the Office Action, claims 7, 9, 13-17, 19 and 20 were presented for examination, with claim 7 of independent form.

With this Amendment, claims 7 and 17 have been amended, and claim 19 has been cancelled, without prejudice. Support for the amended claims is found in the originally filed application. Accordingly, no new matter has been added.

**Claim Amendments**

Claim 7 has been amended to include the features of claim 19.

Claim 17 has been amended to independent form.

No claim fee is believed necessary as the number of new independent claims (1) does not exceed the number of independent claims paid at the time of filing the application. However, in the event there are any fee deficiencies or additional fees are payable, please charge them (or credit any overpayment) to our Deposit Account 50-2121.

**Rejections Under 35 U.S.C. §103(a)**

Claims 7, 9, 13-17 and 19-20 stand rejected under 35 USC §103(a) as being unpatentable over Brain et al., U.S. Patent No. 4,145,184 ("Brain") in view of Trexler, Jr. et al., U.S. Patent No. 6,162,857 ("Trexler").

Without acquiescing to the properness of the foregoing rejection against the claims, Applicant has elected to amend claim 7 to expedite prosecution and better clarify from the art by incorporating the features of dependent claim 19. Applicant will now address the cited art in relation to the amended claim 7.

Brain discloses water-insoluble friable microcapsules which comprise a liquid (perfume) core containing one or more perfume ingredients and a thin polymeric shell completely surrounding the liquid core for use in a detergent composition. Col. 2, lines 50-53. Brain emphasizes that by encapsulating the perfume in a water-insoluble shell, the perfume is protected throughout a laundering operation. Col. 2, lines 53-55. Brain also points out that such

construction is one that the perfume is only released “when the microcapsules rupture.” Col. 2, lines 60-61.

The microcapsules of Brain are then described as those which can be “prepared by any conventional process” and that preferably, the microcapsule shell material is prepared from urea-formaldehyde interfacial polymerization. Col. 4, lines 9-14. Brain emphasizes that the microcapsules “must” be friable in nature, and describes this as “the propensity of the microcapsules to rupture or break open when subjected to direct external forces or shear forces.”

In addition, Brain goes on to teach various other aspects of his “detergent compositions.” This teaching starts at column 5, line 40 and continues through column 9, line 43, where the specification then goes on to provide some details on composition preparation and performance testing. What is, however, believed significant, is that Brain identifies what are termed “detergency builders” for the detergent composition, and among those builders, Brain identifies aluminosilicates for use as a water softener. Col. 7, lines 45-50 and col. 8, lines 52-65. Such builders are therefore identified as completely independent of the shell material for the perfume-containing microcapsules.

Viewed in that context, it is respectfully submitted that one of ordinary skill in the art, reviewing Brain, would not conclude that the shell for the microcapsules is one that would be benefitted in any manner by incorporation of, as currently claimed, a polymer in combination with a platelet type structuring agent (e.g. a silicate) where the polymer material contains pendant ionic groups and where the polymer forms an ionic bridge with the structuring agent. See amended claim 1. Again, Brain, when considering the use of an aluminosilicate, teaches that such are only “builders” for the detergent, and not associated in any manner with the preparation of a friable perfume-containing microcapsule, that is preferably made of urea/formaldehyde resin.

It is understood that the Office Action recognizes that Brain failed to disclose the claimed structuring agent in the form of platelets and that attention was therefore directed to Trexler, Jr. Office Action at page 2. However, as noted, one of ordinary skill in the art, starting with Brain, would emerge with the view that compounds such as aminosilicates have nothing to do with shell formation of a friable microcapsule. In that sense, Applicants respectfully question the combination of Brain with Trexler, Jr.

Furthermore, assuming Trexler's teaching would be combined with Brain, it is noted that Trexler is directed at a polyester-platelet composite made by extrusion mixing which composite is described as having improved gas barrier properties. See, Trexler, Abstract and col. 3, lines 18-22. Trexler points out the improvement in gas barrier properties occurred when the amount of platelet particles in the polyester increases. Col. 8, lines 55-61. The use of extrusion mixing to provide mixing of the clay platelet is emphasized, e.g., in the various examples of Trexler which start at column 11, line 54 and proceed to column 16, line 23. In that regard, Trexler teaches that the platelets are dispersed throughout the polyester host.

Applicants therefore pause to note that even if one assumes that Brain and Trexler are combinable, one emerges with the view that Brain teaches that one may prepare a friable microcapsule containing a liquid perfume, where gas barrier properties are not considered and silicates are identified as having nothing to do with the shell. Trexler teaches that to improve gas barrier properties, one may form a polyester with a clay material dispersed therein by extrusion compounding. Putting the two references together therefore would appear at best to lead to the formation of a microcapsule, where if one wanted to somehow improve gas barrier properties for a liquid perfume contained therein, one might form the microcapsule from polyester with clay dispersed through-out by an extrusion compounding procedure.

The above being the case, Applicant notes that in raising the rejection against the combination of claim 7 and 19 (i.e. the feature of microcapsule with the structuring agent where the structuring agent provides a gradient within the poly material that is used to form the microcapsule shell) the Office Action provides the following:

9. In reference to claims 17 and 19, which specifies that the structuring agent forms an inner shell around the core and the polymer material forms an exterior shell around the inner shell. It would have been obvious to one of ordinary skill in the art at the time of the invention to form a dual layered microcapsule, wherein both outer layers comprise the structuring agent and the polymer material, however, each layer comprises the components in different amounts. The motivation do to so is provided by the fact that a thicker coating will better protect the core material and decrease chances of undesired core release. Further, a variation in the amounts of components will further increase the strength of the core material. Either the inner layer or the outer layer can comprise a greater

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amount of the structuring agent and thus can be considered the structuring agent layer. The corresponding is true for the polymer material. It is the examiner's position that selection of which layer comprises a greater amount of either material is rendered result effective variables because changing them will clearly affect the type of product obtained. See MPEP § 2144.05 (B). Case law holds that "discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art." See *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

10. In view of this, it would have been obvious to one of ordinary skill in the art to utilize a greater amount of structuring agent in the inner layer so as to produce desired end results. Wherein it is clear that if the inner layer comprises a greater amount of structuring agent and the outer layer comprises a smaller amount of structuring agent, the gradient of claim 19 is obtained.

11. It is noted that the inner layer can be considered the structuring agent layer since it comprises the structuring agent, and the outer layer can be considered the polymer material layer since it comprises the polymer material.

As provided above, the rejection posits that:

"It would have been obvious to one of ordinary skill in the art at the time of the invention to form a dual layered microcapsule, wherein both outer layers comprise the structuring agent and the polymer material...." (emphasis added)

However, as noted above, the art of record, even if combined, does not teach or suggest the use of the gradient now recited in amended claim 7 or 17. Again, at best, Trexler teaches that the platelets are extrusion compounded into the polyester, such that even if one used the Trexler formulation in Brain, one would not arrive at a gradient for the structuring agent as currently claimed.

In other words, claim 7 recites, *inter alia*, that polymer material forms an interior shell around said core component, and said structuring agent forms an exterior shell around said interior shell such that a gradient exists extending radially into said microcapsule from said structuring agent to a mixture of said structuring agent and polymer material to said polymer material. (emphasis added) Such a feature is not believed disclosed or suggested by the art of record.

Now, turning back to the rejection, the Office Action indicates that it would be obvious for both layers to comprise the structuring agent and the polymer material. However, such being the case, it would not be possible, and thus not obvious, to transition from the structuring

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agent, to a mixture of the structuring agent and polymer material, and then to the polymer material. In other words, given the rationale set forth in the Office Action for a rejection of obviousness, it would not be possible to transition from structuring agent *without* polymer material, to a mixture thereof, and then to polymer material *without* structuring agent.

Applicant believes that, from the foregoing, if one of ordinary skill in the art would provide a mixture of structuring agent and polymer material for both layers as posited in the Office Action, then it appears to be non-obvious to have a portion of the shell component devoid of structuring agent mixed with the polymer material, particularly as this portion of the shell component may be expected to have inferior oxygen and/or water permeability as compared to the portion of the shell having polymer material mixed with structuring agent. However, in doing so, the Applicant's claimed invention also provides the unexpected advantage where a portion of the shell component formed of structuring agent without polymer material reduces oxygen and /or water permeability due to the tortuous structure of the structuring agent. See page 6, paragraph [0020] of the specification.

Amended claim 17 is believed by the Applicant to be allowable for similar reasoning as provided above with respect to claim 7.

Accordingly, the Applicant believes that it has been demonstrated, with reasonable clarity, with citations to various portions of the specification, that the claims presented herein define over the teachings of the cited references, either alone or in combination. In view of the foregoing amendments and remarks, it is respectfully submitted that independent claims 7 and 17 are patentable over Brain and Trexler, and the rejection of the claims should be withdrawn upon reconsideration. Allowance of independent claims 7 and 17, as well as the pending claims which depend directly or ultimately therefrom, is respectfully requested.

**SUMMARY**

Having dealt with all the rejections raised by the Examiner, it is respectfully submitted that the present application, as amended, is in condition for allowance. Thus, early allowance is earnestly solicited.

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If the Examiner desires personal contact for further disposition of this case, the Examiner is invited to call the undersigned Attorney at 603.668.6560.

In the event there are any fees due, please charge them to our Deposit Account No. 50-2121.

Respectfully submitted,

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